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The south portion of Allatoona Dam begins to take shape as contractors begin erection of three 20-ft. dia. penstocks to feed the power station

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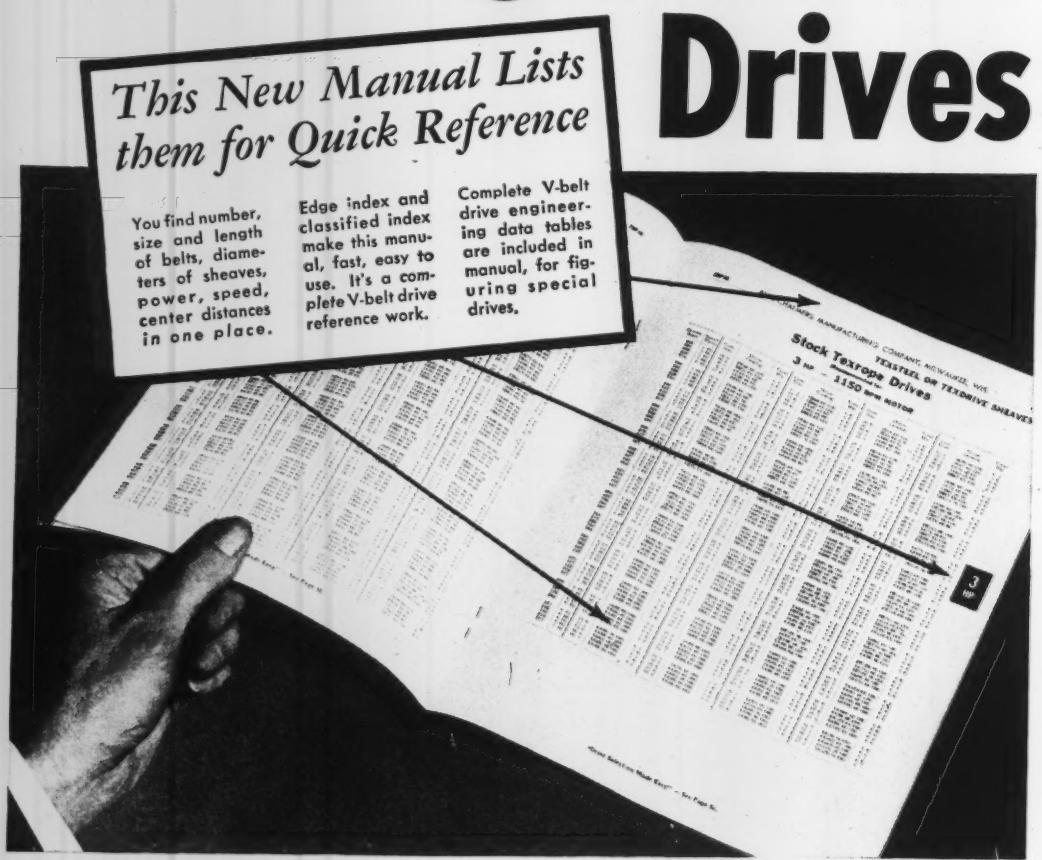
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News of the Week

ENGINEERING NEWS-RECORD • DECEMBER 18, 1947 • VOLUME 139 • NUMBER 25

Economic issues dominate highway research meeting

Highway Research Board considers questions raised by rising costs—Many technical papers discussed at 27th annual meeting in Washington

Radical changes in highway programs as a result of rising costs of maintenance and construction were seen as highly probable by speakers at the annual meeting of the Highway Research Board held in Washington Dec. 2-6.

Added income was held to be essential to provision of adequate highways, and widespread revision of tax structures was said to be necessary. Because of rising costs, some speakers characterized part of the current long-range planning as visionary unless added sources of income are found.

Despite many handicaps, including a serious and continuing shortage of engineers, the amount of federal-aid highway construction under way this year exceeds all previous records, according to C. D. Curtiss, deputy commissioner, Public Roads Administration. Mr. Curtiss also said that encouraging progress is being made on the postwar program authorized by the Federal-Aid Highway Act of 1944, a total of $1,067,170,000 of work having been approved up to Oct. 1 of this year.

More user taxes

Pressure for more user taxes was seen as a continuing trend by Yule Fisher of the National Highway Users Conference because of higher costs and demands from cities and counties for more money with which to meet their share of the cost of providing adequate highway facilities.

This observation was made by Mr. Fisher in a discussion of current legislative trends in which he said that the resurgence of interest in toll highways is but a sign of this widespread concern over the inadequacy of sources of highway income. Nine states passed some sort of toll-road legislation this year.

On the favorable side, Mr. Fisher said, twelve states took further steps to protect highway funds from diversion, and he expects to see continuing efforts to recoup diverted funds in the future.

Wilfred Owen of the Brookings Institution expressed considerable doubt as to the possibility of raising enough additional revenue from user taxes in view of the current high cost of buying, operating and maintaining motor vehicles. He thinks that the user will not be able to pay much more until his total outlay is cut by introduction of more efficient automobiles. On this point he cited Charles F. Kettering of the General Motors Corp. as saying that the introduction of high-compression engines would save automobile users one billion dollars a year in operating costs.

Caution in long-range highway planning was strongly recommended by C. A. Steele of the Public Roads Administration in presenting a comprehensive study of means for financing such programs. Mr. Steele urged all highway administrators to withhold announcement of the physical aspects of their long-range programs until they had made a thorough study of what those plans will cost at current prices. "Such a study," he said, "may show that the plans of the magnitude now proposed cannot possibly be financed from currently available sources."

Damage due to heavy loads

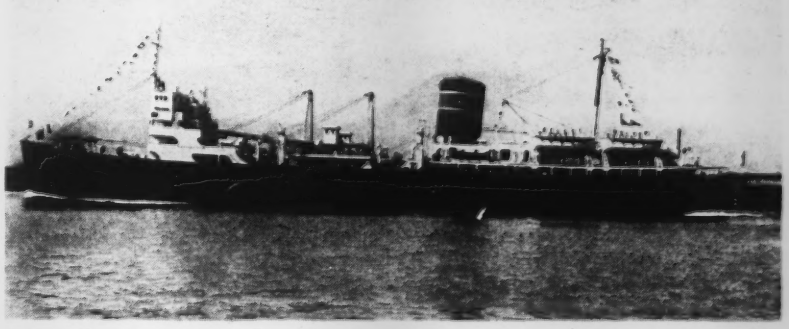
An outstanding impression of this meeting is the additional evidence brought out in several of the sessions of the damage being done to highways through heavily-loaded trucks, many of them loaded in excess of legal limits.

This first came up for consideration at the opening session in a discussion of the relation between pavement pumping and traffic loads presented by K. B. Woods, F. H. Green and H. S. Sweet of Purdue University.

Prof. Woods said that their study of Indiana highways showed that there is no relation between age of pavement and pumping, that pumping may develop just as quickly on a new pavement as on an old pavement. The great increase in pumping is due to the great increase in heavily loaded trucks.

Although much of the soil in Indiana is susceptible to pumping, the phenomenon was practically unknown in 1940. By 1943, 6 percent of the primary

(*Continued on page 14*)



Joins Army's "Navy" —Newest addition to the fleet of seagoing ships operated by the Corps of Engineers is the hopper-dredge "Langfitt", recently commissioned at New Orleans and now operating in the Mississippi River passes below that city. With an overall length of 351 ft., the dredge has a capacty of 3,000 cu. yd. of material, and represents many improvements over other dredges of the same type operated by the corps. The vessel is named for Maj. Gen. W. C. Langfitt, World War I engineer officer.

NEWS IN BRIEF

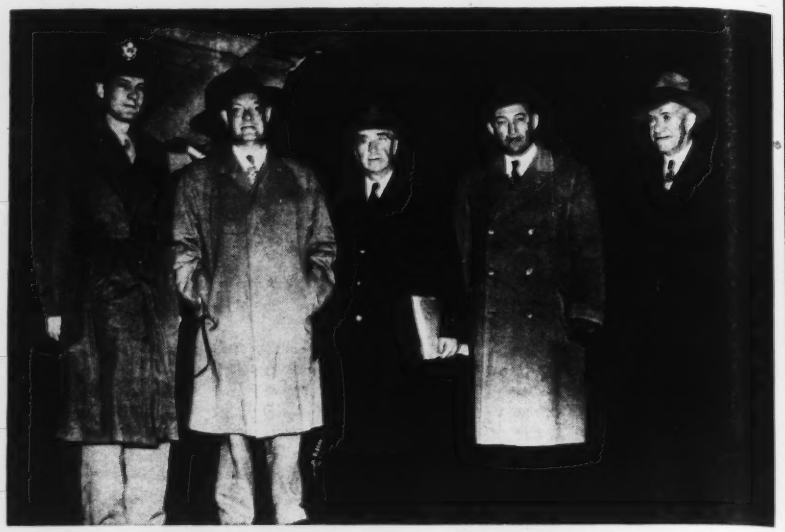
In telegraphic form, here are latest news developments on the engineering and construction front during the week.

Public Construction—The Mississippi Farm Bureau Federation is now drafting plans for a $15,000,000 plant in *Mississippi* to manufacture anhydrous ammonia . . . McKim, Mead & White, New York, is preparing plans and specifications for 10 pre-cast concrete dormitories for the University of Connecticut at *Storrs* . . . *Seattle, Wash.*, is asking bids Jan. 12 on bonds to finance a $5,500,000 public safety building . . . The Fleischer Engineering & Construction Co., *Buffalo, N. Y.*, has submitted the low bid of $9,287,000 for construction of the main VA hospital building in Buffalo . . . Bids are being received for the $3,000,000 La Rue Carter Memorial Hospital at Indiana University Medical Center, *Indianapolis.*

Private construction—The Catholic diocese of *San Diego, Calif.*, next spring will start a building program to include a $6,000,000 university building in Mission Valley . . . Atlantic Chemicals Co. Ltd., has been organized to establish and operate a $4,000,000 portland cement plant at *Hillsboro, N. B.* . . . Plans for construction in the area of *Salt Lake City, Utah*, of a major refining plant have been announced by Standard Oil Co. of California. The first unit is expected to cost about $5,000,000. . . . A several million dollar steam-electric generating plant will be built near *Lumberton, N. C.*, next spring by the Carolina Power & Light Co. . . . Lever Brothers are expanding their *Toronto, Ont.*, plant at an estimated cost of $7,000,000, with plans by Stone & Webster . . . Plans have been revealed for a $2,000,000 addition to the Chesapeake & Potomac Telephone Co. at *Richmond, Va.* . . . International Harvester Co. is planning a $5,000,000 twine mill for *New Orleans, La.*

Highways—The *Mississippi* State Highway Commission now has approximately half of a $60,000,000 highway construction program under contract. . . . According to Chief Highway Engineer C. W. Brown, *Missouri* will need $173,050,000 additional revenue for its 10-year program . . . Grading operations are nearly completed on the Henry G. Shirley Memorial Highway in *Fairfax County, Va.*, and concrete paving work has started on one section. . . . *Arkansas* awarded over $10,000,000 in highway construction contracts during the first 10 months of this year . . . Harris Structural Steel Co. of New York has been awarded the contract for the superstructure of the new Mississippi River bridge at *Memphis, Tenn.*, and work is scheduled to begin next March.

Housing—Weldon Appelt and Carter Grove will build a $1,500,000 apartment house project on a 10-acre site near *Houston, Tex.* . . . The Buffalo Municipal Housing Authority is seeking a $10,000,000 loan from the New York State Division of Housing for slum clearance and construction of low rent housing in the *Buffalo, N. Y.*, area. Southeastern Construction Co. has started work on the $6,000,000 Lindmont and Morosgo apartments at *Atlanta, Ga.*, which will have 504 units and 2,690 rooms . . . *Toronto, Ont.*, will soon call for bids on the first unit of its $5,000,000 Regent Park housing project . . . *AMVETS* Homestead Association is planning to build 600 dwellings as a single project in *Columbus, Ohio.*



Back from Japan — A 5-man committee representing Overseas Consultants, Inc.—a War Department agency for independent surveys of Japanese industry—returns to the Newark, N. J., airport after a two-week trip to Japan. Clifford S. Strike, president of the F. H. McGraw Co. and president of Overseas Consultants, said his committee conferred with General of Army Douglas MacArthur and with its own 30-man field staff in Japan. Left to right are: Maj. J. G. K. Miller; George V. Burgess, Coverdale and Colpitts; John R. Lotz, Stone and Webster Engineering Corp.; Mr. Strike and Frank H. Carhart, Jackson and Moreland Co.

THE COVER PICTURE

The south portion of the multi-purpose Allatoona Dam now under construction near Cartersville, Ga., begins to take shape behind cofferdams that fence off waters of the Etowah River.

There will be three penstocks of 20-ft. diameter, and one smaller penstock to feed the station service unit. Power installation will be two 36,000 kw. and one 2,000 kw. units, with later installation of a third 36,000 kw. unit planned.

National Constructors Inc., Columbus, Ga., are contractors, and Charles Jackson is resident engineer for the Corps of Engineers.

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Waterworks industry misrepresented, says AWWA in a "White Paper"

Magazine articles impugning quality of public water supplies said to frighten people simply to promote stream-pollution control

In a brochure entitled "Safe . . and you drink it!", Harry E. Jordan, secretary of the American Water Works Association, defends public water supplies in North America as the safest in the world and decries the misrepresentation from magazine articles purporting to show that the public is in danger of contracting disease from the drinking water.

Calling the statement a "White Paper for the waterworks industry," Mr. Jordan makes the charge that the industry is being used as the scapegoat in the campaign to reduce stream pollution. Stating the industry's strong opposition to stream pollution, he goes on to say that "Abatement should not and cannot in equity be effected by producing panic among the people who depend upon some public agency for the water they drink. The fact is that the waterworks industry has kept ahead of stream pollution."

No names mentioned

Although no articles are specifically mentioned by name, the statement is aimed primarily at the "Foul—But You Drink It" newspaper advertisements and the article published last August by the *Woman's Home Companion* magazine. These have been scored as destructive propaganda by the president of the AWWA, N. T. Veatch. (See *ENR* Sept. 11, vol. p. 361; Sept. 18, vol. 378, and Nov. 27, vol. p. 748). Another article found objectionable by the association is one titled "Poison from the Kitchen Tap," which appeared in the *Magazine Digest* of October 1947.

Reviewing the progress that has been made during the past half century in reducing water-borne illnesses through improved water treatment methods, notably the use of chlorine, Mr. Jordan examines the implications of statistics that have been cited showing 75,000 cases of water-borne illness occurring in 70 cities in seven years. He finds:

"There have been, during the seven years referred to, an average of 82,500,000 in the U. S. who use public water supplies. If we give these water users just one drink of water a day—there would have been over 210,000,000,000 chances for them to drink unsafe water during the seven years. Actually, people drink water five or ten times a day and the chances ran to a total of more than one trillion. On the 'one drink a day' basis, with the 75,000 mishaps which the (magazine) writer says were found, the record thus shows that the chances of discomfort after drinking water are one in three million! Is that not a good record?"

Referring to a study of water-borne illnesses recently released by the U. S. Public Health Service, Mr. Jordan continued: "One highly interesting fact is disclosed by the study. In not a single instance was the water-borne illness due to structural inability of the water-purification plant to meet the load of pollution placed upon it. In other words, while stream pollution is a serious national problem, waterworks engineers and designers and chemists have kept ahead of it and provided the plant and the materials needed to handle the pollution load.

Industry record is good

Pointing out that the people employed in waterworks in many cities lack both the credit and esteem they deserve from municipal officials on the one hand or the public they serve on the other, Mr. Jordan said that the industry has been doing a good job.

"It has been too modest and too little inclined to dramatize its achievements. It has served well and said little. . . . There is no well-founded reason to question the integrity of public water supply service," concludes the statement.

Ask time extension on Tacoma bridge bonds

No bids were received by the Washington State Toll Bridge Authority at a scheduled opening Dec. 2 on a $14,000,000 revenue-bond issue to finance reconstruction of the Tacoma Narrows suspension bridge, but a possibility still exists that the bonds may be sold.

A syndicate of investment bankers, represented by the A. C. Allen Co. of Chicago, asked for a 90-day extension on the bond bid date to try and work out a satisfactory deal. The syndicate said that it needs additional time to get various investment bankers to agree on details of the financing plan.

"Terrific construction costs and the very weak bond market" were responsible for the lack of bond bids, Gov. Mon C. Wallgren, chairman of the toll bridge authority, believes.

The Bethlehem Steel Corp., low bidder for the contract to rebuild the bridge proper, has formally agreed to extend its bid by 90 days to give bond buyers a chance to submit a bid.

Buggs Island Dam *—Work is now well advanced on construction within the first cofferdam for Buggs Island Dam on the Roanoke River about 179 miles above its mouth near Clarksville, Va. The $69,000,000 combined flood-control, navigation and power project being built by the Norfolk District Corps of Engineers, is a structure of 22,000 ft. in length, including 2,785 ft. of concrete and 19,572 ft. of earth-fill. Maximum height of the dam will be about 144 ft. A combination of Walsh Construction Co., Ralph E. Mills, Inc., and Blythe Bros. Co. is contractor on the preliminary work shown. Bids on the main dam are asked on Jan. 13.*

DEVELOPMENTS BEYOND U. S. BORDERS

Digested from reports by Engineering News-Record correspondents and the McGraw-Hill World News Bureau

Mexico gets credits to buy railroad equipment, plans huge expenditures on highways—Russia builds "islands" for oil recovery—India reveals plans for housing and reconstruction in New Delhi

Mexico—To aid in implementing its long-range railroad rehabilitation and reconstruction program (*ENR* Feb. 27, vol. p. 334), the Mexican government, in a joint announcement with the U. S. Export-Import Bank, said it had received a credit of $13,000,000 last week.

The first $7,000,000 of the credit will be used to finance purchases in the United States of materials and equipment—principally rails and accessories for the national railways.

At the same time, the government announced that an appropriation of $100,000,000—a record high—will be made in the 1948 budget to finance road construction throughout the nation. The sum will be about one quarter of the total national budget.

Venezuela—The Venezuelan government said last week it was considering construction of a $15,000,000 subway to serve Caracas.

According to preliminary plans prepared by Rafael Bergamin, Caracas architect, the subway would extend from Catia to Petare, with various branches, and would carry some 50,000,000 passengers per year.

Government officials said, however, that no definite steps would be taken until after the elections this month.

England—The Great Western Railway has now set up a special weather forecast division for weather news distribution throughout its system to enable its men to cope with fog and winter weather.

Argentina—A $1,600,000 concrete-arch bridge over the Santa Cruz River in southern Argentina is now under construction about 1½ miles from the city of Santa Cruz. The reinforced-concrete structure, including approaches, will be 11,500 ft. long.

Puerto Rico—In view of the U. S. Navy's objections to the site of the proposed Isla Verde airport for San Juan (*ENR* Dec. 4, vol. p. 769), U. S. airport engineers have recommended a new site for the $15,000,000 terminal. The new location would be at Catano, on the outskirts of the capital, and its selection might make possible a saving of nearly $6,000,000, engineers said.

Navy spokesmen objected to the original site on the ground that airport operations would interfere with the Navy's huge communications center, located within a short distance of the Isla Verde site.

Industrial Development . . .

South Africa—A multi-million dollar scheme for the industrialization of Rhodesia—one of the most significant parts of which calls for large-scale production of steel—is still in the planning stage, but reports on preliminary surveys are said to be so encouraging that there is little doubt that the whole project eventually will be carried through.

An interim report on the scope of the project was given in London recently by the Southern Rhodesian government.

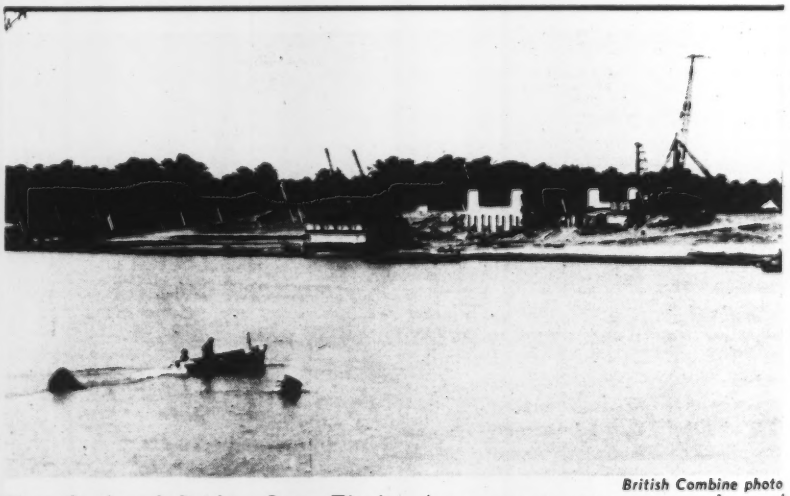
The initial construction project, and the key to the whole development, would be a 300-ft. high dam across the Zambesi River in its Kariba Gorge. The reservoir thus created eventually would hold some 53,000,000 acre-ft. of water to provide hydro-electric power and control the Zambesi floods, and serve as an irrigation reservoir. Electricity generated would be cheap enough to make possible an electric-furnace steel production plant to utilize abundant hematite ore.

Planning . . . .

India—A sweeping plan for the expansion of New Delhi—India's capital city—with stress placed on housing, has been prepared by the Ministry of Works.

South of the city, a colony of 1,000 apartments is to be built to house government clerks, and 25 four-story apartment buildings will house other government employees. In the same area, some 1,500 acres of land has been set aside as a "diplomatic enclave" where more than 50 embassies and legations are expected to be erected.

Russia—A new program of municipal works is to be launched soon as part of a general plan for the reconstruction of Moscow along modern lines. The program will include reconstruction of the eight major highways radiating from the business center to the suburbs, construction of new bridges and widening of a num-



British Combine photo

First Railroad Bridge Over Tigris—A seven-span concrete and steel bridge now under construction by British Engineers south of Baghdad will be the first railway structure to cross the Tigris River. Planned as a major link in the Middle-East railway system, the structure will carry a meter-gage railway line and an 18-ft. roadway, to make possible through railway freight connections from the oil fields of Persia to Turkey, Mosul and Basra.

ber of main streets. Actual work on the plan—drawn up before the war—is expected to get under way by early spring.

Venezuela—The Banco Obrero, a government subsidiary, said recently it may be forced to build some 40,000 homes in the next ten years to keep up with the rapid growth of Caracas. The bank has already spent some $100,000,000 over the last 20 years on workers' accommodations.

Oil Recovery . . . .

Russia—"Island" foundations of structural steel that seem to be somewhat comparable to those built by U. S. engineers in Venezuela (*ENR* Dec. 26, 1946, vol. p. 859) have been developed by Russian technicians for use in oil operations in the Caspian Sea.

The steel "islands" are made in six sections of tubing—each section weighing about 20 tons and varying in height from 32 to 50 ft. The tubing sections are set up on the sea-bottom by cranes, following which a drill derrick and all heavy drilling equipment is erected on top of the tube sections. Time required to complete the base of the "island" is set at five days, in comparison to far longer periods if conventional piling is used.

No pictures of the new development were made available to press representatives in Moscow.

Miscellany . . . .

Liberia—Austin Brockenbrough Jr., recently director of the department of Public Utilities of Richmond, Va., is to become chief engineer for Stettinius Associates Liberia, Inc.—organized to aid in the economic development of that African country.

Philippine Republic—The Cebu Portland Cement Co., its plant on the island of Cebu completely rebuilt after four years of Japanese operation, is now in a position to deliver its maximum pre-war output of about 12,000 bags daily.

Australia—Bids will be asked shortly for a piping and pumping system to supply drinking water to townships along a 24-mi. stretch of the northern bank of the Derwent River, in Tasmania. Water is to be pumped from the Derwent to a suburb of Hobart, the state capital, and in conformity with recent Australian practice, the pipe is to be continuously-welded sheet steel, laid underground.

***Chlorine Blast Kills 19**—Nineteen persons died either from blast or gas effects recently when a 25-ton tank of liquid chlorine exploded in a sulphite mill at Rauma, Finland. The chlorine, used for bleaching sulphite pulp, was stored in six large tanks on the ground floor of the three-story plant, and on floors above them were barrels of chlorine and slaked lime. Some 16 hours after the tanks were filled from railway cars, an explosion of undetermined origin rocked the building, tearing out the front wall and damaging other tanks. Most of the fatalities occurred when the chlorine gas moved into the nearby town.*

Association to protect Salt River Valley water

Governors of the Salt River Valley Water Users Association have voted to revoke certain special water rights granted owners of large acreages who financed the sinking of wells 19 years ago, and thus take over absolute control and distribution of all underground water in the project.

Arizona has no underground water code and the association governors deem the move necessary to safeguard an exploited water table that has been dropping at an alarming rate.

The association first ordered the ruling into effect Jan. 1, 1949, then held action in abeyance until O. L. Norman, general manager, can provide detailed cost estimates of the undertaking. The action was taken without advance notice to the more than 10,000 shareholders and litigation is expected. The association and the Roosevelt Irrigation District have been involved in court action for a number of years on a similar situation.

The association instructed Norman to prepare regulations governing control of all underground water in the project, regardless of whether it is developed by association or private wells. No further private wells may be drilled without association consent.

More than $2,000,000 has been invested in 123 private wells pumping on the project and capable of lifting more than 15,000 acre-ft. of water per month from the underground reservoir.

The special privilege rights which the association order cancels date back to a 1928 water shortage.

Goerz succeeds Miller as Army engineer in Austria

After nearly four years in Europe, Col. H. S. Miller, chief engineer of the U. S. Forces in Austria, is returning home for a new assignment. He will be succeeded in his Austrian post by Col. Peter P. Goerz.

Colonel Miller landed on Omaha Beach in Normandy in the summer of 1944 as engineer of the 19th Corps. After the drive across France, he became engineer of the 16th Corps, which spearheaded the first assaults across the Rhine. He has been chief engineer in Austria since the beginning of our troop establishments there.

Colonel Goerz was district engineer at Seattle during the first part of the war and later was assigned to the Air Forces in the South Pacific. Subsequently he was in the military construction division of the Office of the Chief of Engineers in Washington, D. C. and most recently director of real estate in that office.

NLRB asks courts end building strikes

Injunctions to halt secondary boycotts were sought by General Counsel Robert N. Denham of the National Labor Relations Board last week in two situations affecting construction. They were part of a growing number of cases in which Denham has invoked his authority under the Taft-Hartley Law to enjoin unfair labor practices by unions.

In both instances the unions involved were charged with violation of Section 8 (b) 4 (a), which makes it an unfair labor practice for a union to try to force an employer to stop doing business with another person.

In Kansas City, Mo., the Federal District Court asked the AFL Carpenters Union, its agent, Walter A. Said, and the AFL Building Trades Council to show cause why it should not enjoin the unions from interfering with erection of prefabricated houses by Klassen & Hodgson, inc., building contractors.

According to the petition filed by NLRB's general council on complaint of the contractor and the Wadsworth Building Co., Overland Park, Kan., the union tried to prevent Klassen & Hodgson from doing business with the Wadsworth firm, which manufactured the prefabricated units being erected. The carpenters had a dispute with Wadsworth over wages.

The carpenters refused to permit members to erect the houses, refused to let employees of the builder join the union, got the building trades council to put Klassen & Hodgson on the "We do not patronize" list, and induced employees of other firms not to handle goods or perform services intended for the builder, the petition alleged.

N. Y. FAECT involved

In New York, a court hearing was set to determine whether an injunction should be issued against the Metropolitan Federation of Architects, Engineers, Chemists and Technicians, Local 231, affiliated with the CIO Office Workers Union.

This union is accused of trying to force Design Service Co. and Project Engineering Co., two New York engineering firms, not to perform services for Ebasco Services, Inc., against whom the union is on strike. This, it is alleged, was done by intimidation of employees of the two engineering firms through picketing and distribution of literature.

Design Service and Project Engineering both filed complaints with NLRB. Both are engaged in industrial designing.

In answer to the NLRB action the Federation of Architects, Engineers, Chemists and Technicians, Local 231 (CIO)—a New York City group—has announced it will fight the injunction requested by the National Labor Board.

Judge Sylvester Ryan of the Southern District Court has issued a show-cause order at the request of the Regional Labor Board.

Union will fight action

Martin Cooper, union local president called the NLRB action a "vicious attempt to restrain it from its legitimate activities of organizing and extending collective bargaining to technical employees. The union will fight the injunction proceeding to challenge the constitutionality of the Taft-Hartley law and its use in the present instance. Mass picketing will continue at the above companies."

Union members are currently picketing the two engineering firms and Ebasco Services, Inc., of New York. The "show-cause" order is based on an allegation that the Design Service and Project Engineering picket lines are a part of the Ebasco strike (*ENR* Oct. 23, vol. p. 565) and the union's action therefore constitutes a secondary boycott. The union stated that the strikes against Project Engineering and Design Services were primary strikes called to win recognition of the union in those organizations.

Isabella Dam plans discussed by engineers

A 7-member board of engineers held a series of meetings in Kernville and Sacramento, Calif., last week to make final recommendations on the type of dam to be built on the Kern River at Isabella and to settle other construction details.

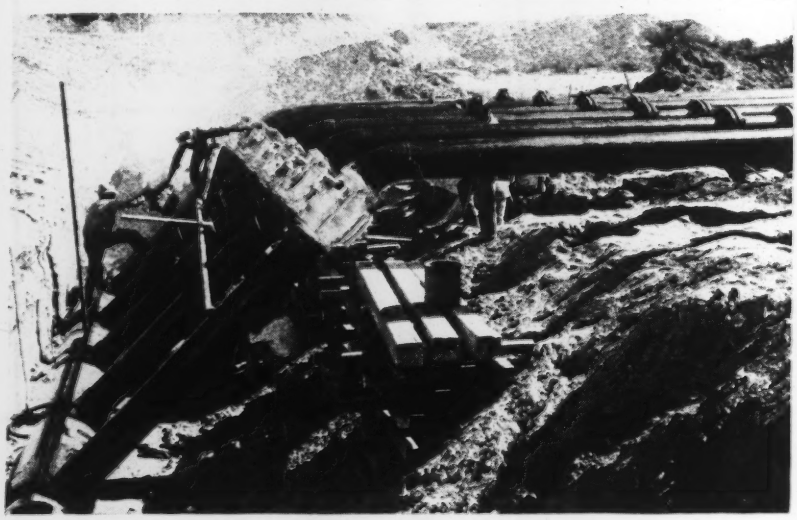
Although a formal report of the discussions will not be issued, minutes of meetings will be printed, the district engineer's office in Sacramento said. The office said the results of the meeting will not change plans to start construction of initial features of the dam by February, 1948.

The Isabella Dam was authorized for construction in the 1944 flood control act at a cost of $6,800,000, and the first construction appropriation was made by Congress this year.

Winter stops work on Angostura Dam

Severe winter weather has stopped the pouring of concrete at Angostura Dam near Hot Springs, S. D. the Utah Construction Co., contractors for the project, said last week.

At the peak of operations during the summer and fall, a force of more than 400 men was employed at the dam. This has been cut to approximately 100. The project is about one fourth completed, a Utah Construction official said. The completion date will probably come late in 1949.



Gas Meter—A natural gas metering station is put into operation at the California-Arizona border as the $70,000,000, 1,200-mi. pipeline of the El Paso Natural Gas Co. goes into partial operation. The line is expected to be carrying 175,000,000 cu. ft. of gas daily by Jan. 1, and in another year extensions will increase capacity to about 305,000,000 cu. ft. per day.

Plan to stop jurisdictional disputes makes progress in AGC-AFL sessions

Effective machinery likely to be set up soon to prevent such matters going to the National Labor Relations Board

Efforts of the AFL building and construction trades department to establish effective machinery for settling jurisdictional disputes between building trades unions were making progress this week.

Negotiations between the AFL and the Associated General Contractors have taken place looking toward agreement on a plan that would keep jurisdictional feuds from reaching the National Labor Relations Board, which under the Taft-Hartley labor law, is directed to settle such disputes. Usually, disputes are referred to the board upon complaints eminating from an employer, who charges that a union is engaging in an unfair labor practice under Paragraph 4(d) of Section 8(b).

This paragraph states that it is an unfair labor practice for a union to force an employer to assign work to employees in a particular labor organization or in another trade, craft or class. Such action, however, would not be considered "unfair" if the employer is ignoring an NLRB certification.

Because of this section in the new labor law, the AFL Building Trades Executive Council stopped issuing rulings of jurisdiction when the law was passed June 23. It did not wish to subject itself to a possible unfair labor practice charge or damage suit.

AFL orders action

The building trades convention in San Francisco last October directed the executive council to draft a plan which, if approved by the presidents of a majority of the 19 unions involved, will become binding on all of the unions and be made a part of the building trades constitution.

Accordingly, the AFL is proposing a plan which would provide for the arbitration of jurdictional differences before a panel composed of an equal number of representatives of the unions and the contractors, and a neutral member.

One of the hurdles to be overcome is the AFL's insistence on selecting the neutral arbitrator. The contractors would like to have equal voice in his selection, but AFL's position is that jurisdictional disputes are an internal matter. Therefore, it wants to control the decision, even though the contractors may be given some voice in it.

There is also some disagreement between the AFL and AGC over who should name the contractor representatives.

The AFL needs contractor participation in the plan in order to assure employer acceptance of jurisdictional decisions and preclude the filing of damage suits or unfair labor practice charges by them.

Building trades unions have another reason for wishing to keep their fights from getting into NLRB hands. They fear the possible upsetting effects of a decision in which they had no voice and which might come from a government official not acquainted with the complicated jurisdictional questions.

NLRB is giving encouragement to the AFL and AGC. It faces with trepidation the prospect of having to wind through the maze of jurisdictional fences which has been built up during the past 40 years.

All but two of AGC's 104 chapters are reported to have approved the idea of cooperating with the unions.

Labor—An unusual approach to the problem of rising costs in the building industry is that of Local 281, United Brotherhood of Carpenters and Joiners of America, *Binghamton, N. Y.* The union would like to get more for its work but it is not asking for a specific increase. E. B. Lambert, business agent for the local, said that the union has asked for a meeting of its representatives with spokesmen for the Associated Building Contractors. "We merely want to talk over the effects of the increasing cost of living on union members, and conditions in the building industry in connection with possible higher wage scales," officials said. Union carpenters in Binghamton now receive $1.75 an hour . . . Regularly employed apprentices in the building trades—bricklayers, carpenters and plumbers—have enrolled in the vocational school of the public evening schools at *Dallas, Tex.* The purpose is to help the apprentices improve their skill so that they can work without constant supervision. The tuition fee for each apprentice is $9. . . . To relieve a skilled-labor shortage in *Dover, Ohio*, the board of education announced classes for carpenter's and bricklayer's unions and local firms are supplying the equipment.

ABC seeks clarification of "executive" status

A plea that the wage-hour administrator adopt the Taft-Hartley definition of a "supervisor" in defining "executive" employees for the purposes of the wage-hour law, has been made by the Associated General Contractors.

Wage-Hour Administrator William R. McComb's hearings on proposed changes in the definition of administrative, executive and professional employees who are exempt from the wage-hour law will continue to the middle of January.

"The necessity of following one definition for 'executive employees' under one law and another definition for 'supervisors' under another law leads only to confusion and possible non-compliance," H. E. Foreman, AGC managing director, said in a prepared statement at the hearings.

Foreman urged that the regulations be changed to broaden the exemption of executive and supervisory employees rather than to restrict it further. He also asked that there be no increase in the present salary test. The CIO has asked that a $500 salary be one of the conditions to determine exempt status.

Indian tribes seek halt in McNary Dam work

The federal government has been asked to enjoin the Guy F. Atkinson Co. from building a cofferdam at the site of McNary Dam on the Columbia River near Umatilla, Ore., in a suit filed in federal district court at Spokane, Wash., by two Indian tribes.

Complaints filed by the Yakima tribe of central Washington and the Nez Perce tribe of Idaho allege that the dam would destroy the river's run of salmon—the Indians' principal source of food. They contend construction of the dam violates treaties signed in 1855 between the United States government and the two tribes.

These treaties, the complaints allege, guarantee the tribes and their descendants "the right of taking fish at all usual and accustomed places" from the Columbia and its tributaries. The Guy F. Atkinson Co., the complainants set forth, "is trespassing upon the property rights" of the Indians and blocking migration of spawning salmon upstream and of fingerlings downstream to the ocean.

The Indians value their fishing rights at millions of dollars. The complaints were signed by tribal councils, representing 3,600 Yakimas and 1,550 Nez Perces, in ceremonies on the old treaty grounds in the Walla Walla valley.

HIGHLIGHTS OF MUNICIPAL DEVELOPMENTS

Summarizing current activities in city engineering and construction throughout the country.

New York gets $16 million parks program—Planners retain engineers to aid city development—Tulsa begins close check on building contractors' permits—Street programs pushed

Park Commissioner Robert Moses has submitted a 32-page report to city officials reviewing progress over the last two years and calling for expenditure of more than $16,000,000 on New York City and playgrounds by 1950.

The report said that during the war years there was a cumulative deterioration throughout the park system as a result of personnel, material and equipment shortages and other war restrictions. New construction was at a standstill. During the last two years the department has spent $1,711,000 in rehabilitating the parks and parkways, and $12,732,000 in the construction of new play areas and reconstruction of existing parks. The program for the next two years includes additional rehabilitation at an estimated cost of $1,100,000, and the construction of new playgrounds and the reconstruction of existing parks $15,610,000.

The report also gives the highlights of the long-range program for the construction of recreation centers, additional public beaches, new neighborhood playgrounds and other facilities needed to give the city an adequate recreation system.

Emphasis is placed on the need for additional personnel and equipment to maintain the parks at a satisfactory standard. There are less employees in the maintenance division than in 1938, although improved park areas have increased by 3,700 acres since that time.

Park use reached a new peak in 1947 with an estimated attendance of 148,500,000. Income from concessions and revenue producing facilities also set a new record of $1,790,000.

Progress of planning

City planning—with particular emphasis on the provision of adequate traffic arteries—held major interest last week, as many cities reviewed their present plight.

At Minneapolis, Minn., Hennepin County commissioners virtually assured the success of a 3-year effort to redevelop the city's blighted "lower loop" business area, by agreeing to start construction of a $500,000 welfare building on the site soon. Planning consultants have drawn up an elaborate program (see cut on this page) to redevelop the blighted area as a civic center, complete with superhighways to carry traffic into and out of the area.

At Charlotte, N. C., Traffic Engineer Robert Burch told the city's planning commission that a current federal-state-city survey will result in "definite recommendations" for parking relief, but warned that final solution of the downtown traffic snarl is strictly a local problem—pointing out that completion of a crosstown expressway will aggravate the situation by pouring new traffic into an already congested area.

The Seattle, Wash., City Planning Commission announced it had retained Earl O. Mills of St. Louis, Mo., as a consultant on the revision of the city's zoning code and comprehensive planning program. Mr. Mills is to be retained under a 1-year contract.

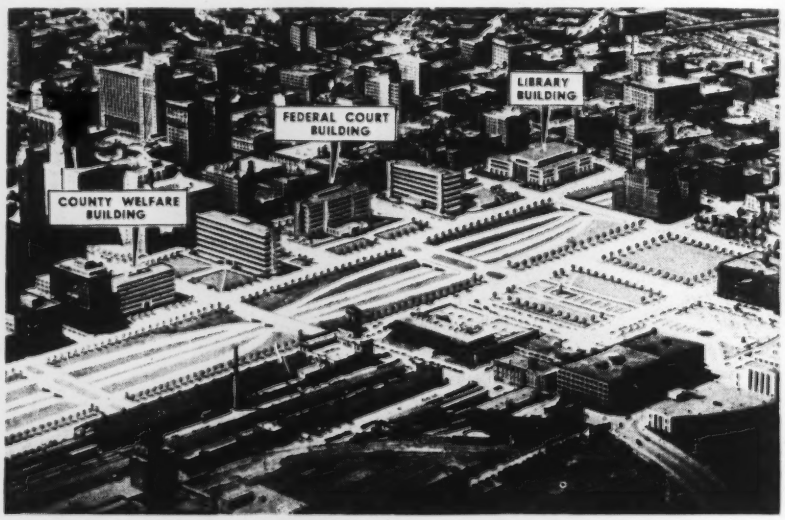
Richmond, Va., also engaged a traffic engineer to study its problems—George W. Barton, of Associated Consultants, Evanston, Ill., to work with the city's newly-formed Parking Authority to attack the parking problem in the central business district.

The Baltimore, Md., city council, after months of wrangling, defeated a proposal for construction of an expressway across the city's tangled downtown area, after hearing what council members said were "hundreds" of complaints from residents along the proposed route who objected to channeling traffic away from local business houses, disruption of residential communities, and other undesirable features that they claimed would result from the superhighway.

Check on builders

In a move to check "wildcat" construction by builders who fail to obtain permits before starting work, H. S. Thayer, building inspector, and the Tulsa, Okla., city engineer and street commissioner began a thorough check of permit applications.

(Continued on next page)



Minneapolis Civic Center—After three years of work, the Civic Center Development Association of Minneapolis, Minn., has presented its plans for the complete re-development of the "lower loop" slum area as a governmental center. Approval by the Hennepin County Board, which plans to start a $500,000 welfare building on the site next spring. Other structures to be built would include a $6,000,000 federal courts building, a $3,000,000 library, and a public safety building, a city office building and a Veterans Administration office center, each to cost about $1,000,000. Plans have been prepared by Long and Thorshov, Inc., architects.

Under provisions of a recently-adopted city building code, any new construction requires a permit, Thayer said. "Inspectors of the building department are continually finding construction work—both new and alteration and repair—which has gone forward without a building permit." He added that lack of application for permits has caused other city departments to overlook the construction, and said many structures were nearly completed before any inspection was made.

City officials estimated that losses in fees for permits would total a "considerable sum".

Street projects

Seattle, Wash., voters will decide next March on a $3,500,000 bond issue for improvement of the city's street lighting system as a means of lessening traffic accidents and increasing police protection.

Fort Wayne, Ind., held hearings on a $6,625,000 proposal for the elevation of the tracks of the Nickel Plate Railroad to provide grade separations at principal business arteries. Under the proposal, the state would pay 80 percent of the elevation cost and the railroad 20 percent; while the city and county would each pay 40 percent of the cost of six grade-separations, with the railroad paying the remaining 20 percent of this cost.

The Tennessee State Highway Department announced that work will start immediately after Jan. 1 on a $535,000 project for construction of a new viaduct on Broadway in Memphis to cross over railroad yards.

And at Akron, Ohio, the state highway department announced it had awarded a $1,934,000 contract to Bates and Rogers Corp., of Chicago, for construction of a new high-level bridge across the Cuyahoga Gorge to connect Akron streets with arteries in Cuyahoga Falls.

Ask city housing aid

As a condition on the proposed construction of some 3,000 homes to sell from $5,500 to $8,000, the Home Builders Association of Greater Cleveland, Ohio, has asked "full cooperation and assistance" from the city's government.

The group proposes to build the homes by assembly-line methods.

James V. Funaro, executive director of the organization, said the city is being asked to give the association's projects priority in installation of utilities and paving of streets, and wants the weight of the office of the mayor behind its efforts to obtain materials and labor.

In Minneapolis, Minn., meanwhile, where the city council has been considering a city-sponsored program of prefabricated housing, and permitting the use of "basement homes", labor unions continued to voice strong opposition.

Characterizing the proposals as "ridiculous", Walter M. Frank, business agent for the AFL Lathers Union and spokesmen for the Building Trades Council, said conventional-type homes could be built at reasonable cost, and without the risk of creating what he and other labor leaders have insisted will be future slum areas.

***Water Under Water**—Lake Huron water, pumped through 62 miles of 48-in. and 36-in. prestressed concrete pipe, will be carried under the Saginaw River at Saginaw, Mich., through a 36-in. welded steel pipe to supply the city. Sections of the steel pipe, welded into 500-ft. lengths, are launched into a turning basin and then towed to position and sunk into position. Completion of the $10,000,000 project will assure Saginaw and neighboring Midland with supplies adequate for the next 50 years. W. J. Meagher and Sons, Bay City, are contractors, and Alvord, Burdick and Howson, of Chicago, Ill., are consultants for the entire project.*

Airport projects

Chattanooga, Tenn., is prepared to start work soon to convert municipally-owned Lovell Field into a Class IV airport, taking advantage of a $714,000 CAA grant for the purpose. Work will include extension of one runway to 5,000 ft., and construction of new taxiways and loading strips.

Broome County, (Binghamton) N. Y., awarded a $1,968,600 contract to the D. W. Winkelman Co., Inc., Syracuse, to clear, grade and drain the site of the proposed new Broome County airport. Work is to start before May 1, 1948.

Courthouse plans

The St. Louis (Mo.) County Court was considering a number of alternatives after it opened three bids on the construction of a new courthouse and jail structure in the downtown area of St. Louis.

The lowest base bid, submitted by the H. B. Deal Co. of St. Louis, was $1,391,747, but conditions of the contract include 13 structural items, any or all of which can be omitted to bring the cost within the $1,650,000 bond issue funds available. Among the items that could be eliminated is a tunnel to connect the existing building with the new structure.

County officials at Louisville, Ky., were told by their architectural consultants that a planned new courthouse would cost about $6,400,000 if the proposed 19-story structure is built.

Add to power plant

The capacity of the Madison, Wis., municipal power plant was increased by nearly 90 percent last week, with the addition of a sixth unit to give the station a capacity of 3,165 kw.

Operation of the unit will make possible full-scale Christmas lighting of the city's streets, homes and business places.

Moles society to honor Wheeler and Durkin

Chief of Engineers and tunnel engineer will receive awards for outstanding contributions to construction

Lieut. Gen. Raymond A. Wheeler, Chief of Engineers, U. S. Army and wartime Commander of the India-Burma theater of operations, and William A. Durkin, president of the Walsh Construction Co., have been designated by The Moles, New York society of tunnel and heavy construction men, as winners of its two annual awards for "outstanding contributions to construction progress".

Formal presentation of bronze plaques and citations to General Wheeler and Mr. Durkin, a member of the society, will be made at a dinner in the Roosevelt Hotel, New York City, Feb. 4. Charles B. Spencer, Moles' president, said last week.

Gen. Wheeler

Mr. Durkin

In addition to his strictly military duties, General Wheeler, as Chief of Engineers, Department of the Army, is responsible for directing a multi-million dollar program of civil works construction, including river and harbor and flood control work, in addition to the construction of scores of hospitals for war veterans.

Born in Peoria, Ill., July 31, 1885, Raymond A. Wheeler was appointed to the U. S. Military Academy from Illinois and was commissioned a second lieutenant, Corps of Engineers, June 13, 1911. He served in both world wars, and, between them, saw service in Engineer posts in the United States, Panama and at other points.

William A. Durkin's Career

Railroad construction, working up through the grades of chainman, rodman, instrumentman and chief of party, foreman, superintendent, resident engineer, contractor's estimator, and district manager, gave William Austin Durkin the background to reach the presidency of the Walsh Construction Co. of New York City, Davenport, Ia., Chicago, Ill. and San Francisco, Calif. Among the scores of outstanding projects (other than railroad construction) built by the Walsh organization within the last 15 years are the $23,500,000 Queens-Midtown vehicular tunnel under the East River, New York City; four 33-ft. diameter diversion tunnels for the $125,000,000 Fort Peck Dam, in Montana; the first section of Grand Coulee Dam, on the Columbia River, Washington, (jointly with other contractors); and tunnels and shafts for New York's Delaware River Aqueduct.

Among the Walsh Company's more recent and current projects are the building of Electronics Park for the General Electric Co., at Syracuse, N. Y., and an atomic power laboratory for General Electric at Schenectady, N. Y.

Ore.-Wash. sanitary pact protects Columbia River

A proposed Oregon-Washington sanitation agreement, prepared at a recent meeting of the Oregon Sanitary Authority and the Washington Pollution Control Commission, would forbid discharge of sewage or industrial waste injurious to health, recreation or industry, into the Columbia River between Wallula Gap and the Pacific Ocean.

Wallula Gap marks the point where the river, after forming the boundary between the two states for some 250 mi., turns north into Washington.

The proposed agreement will be presented for adoption at a meeting of the two groups Jan. 26, according to Jack Taylor, director of the Washington commission.

Want $36,766,300 for Willamette projects

The Willamette River Basin Committee and the Willamette Valley Project Committee have jointly submitted to the Oregon delegation to Congress a recommendation for an appropriation of $36,766,300 for construction work on the Willamette Valley project during the 1948-49 fiscal year.

The groups declared that flood damage of $39,000,000 would result during the next 10 years if construction of the Meridian Dam in Lane county is not speeded up. The committees asked $15,000,000 for Meridian, $11,500,000 for the Detroit Dam, $6,147,000 for the Dorena Dam, $375,000 for Fern Ridge Dam and $130,000 for the Cottage Grove Dam. Other appropriations were asked for channel clearing and improvement.

Unique pollution decree issued by Maine court

A court decree believed to be unique in the annals of stream-pollution litigation, in which the polluters are permitted to discharge a certain amount of wastes based on maintaining a predetermined quality of water in the stream, has been handed down by a Supreme Court justice in Maine.

The action, relating to pollution of the Androscoggin River, was brought by the Attorney General of the State of Maine against the Brown Co., Oxford Paper Co. and International Paper Co.

The court ruled that these companies must maintain weekly sampling and analyses of the river at North Turner Bridge and other points to permit determination of the effect of the controlled discharge of waste sulphite liquors, with particular reference to the production of obnoxious odors and fumes. Furthermore, maximum limits are placed on the amount of waste discharge per week during specified periods of the year.

In addition, the decree calls for the installation of a 20 mg. lagoon into which the waste liquors must be stored at any time the dissolved oxygen content of the Androscoggin River at North Turner Bridge "is in danger of falling below" 4 ppm. Designated by the court to supervise tests and direct the operation of the lagoon is Dr. Walter A. Laurance, professor of chemistry at Bates College.

Start big high school building at White Plains

Scheduled to open next September as the first Catholic high school for boys in Westchester County, N. Y., the Archbishop Stepinac High School is now under construction in White Plains.

With total cost estimated at $3,200,000, the school, named for Archbishop Aloysius Stepinac of Yugoslavia, will be a T-shaped, three-story building. A stadium to seat between 4,000 and 5,000 persons, will also be built.

The building will be 252 ft. across and 211 ft. deep. A "stem" 174 ft. long will lead into a section about 184 by 60 ft. A 2-story gymnasium, and a 2-story auditorium to seat 1,100, are included in the design.

Designed by Daniel P. Higgins of Eggers & Higgins, the building is being built by the George A. Fuller Co.

Excavation has also begun for another large building in White Plains—the $1,500,000 branch department store of R. H. Macy & Co., Inc., of New York. The J. Slattery Contracting Co. will complete the excavation and Vermilya Brown will be the builder.

Seek $1.4 billion reclamation funds to bolster Marshall Plan food reserve

Commissioner Straus tells economic committee bureau could "profitably spend" money in four year food program

During the next four fiscal years the Bureau of Reclamation could profitably spend nearly $1.4 billions to increase food production as part of the Marshall Plan for aiding Europe. Commissioner Michael W. Straus last week told a subcommittee of the Joint Congressional Economic Committee. With this fund 5,600,000 added acres could be made to produce 28,000,000 additional tons of food with an estimated value of $704,000,000 between now and June 30, 1952, he further reported.

In outlining what might be done by his bureau to increase our aid to Europe, Commissioner Straus included only those projects already under construction or those that could be placed under way relatively soon. During the remainder of this fiscal year, which ends June 30, $54,000,000 is considered needed for the accelerated program of the bureau.

During the next four fiscal years huge sums would be required. These amounts by fiscal years are as follows: 1949, $384,000,000; 1950, $401,000,000; 1951, $340,000,000; and 1952, $188,000,000. (It will be recalled that the fiscal year 1948 budget was $138,252,000.)

In discussing long-range reclamation plans, Commissioner Straus said that in 1946 all irrigated farms in the U. S. produced 40 million tons of crops and that this figure can be doubled several times before our irrigation water supply is fully utilized. In addition to increased food production, other substantial benefits to be obtained from the accelerated program were pointed out by Commissioner Straus. These include: flood control, power production, soil conservation, recreation, and fish and wildlife benefits.

Truman asks for funds

Last week President Truman came to the aid of the bureau's present program when he asked Congress to appropriate $29,375,000 in supplemental funds for that agency during the present fiscal year. This money is sought for the following four major projects: Columbia Basin, $11,725,000; Central Valley, $10,700,000; Colorado-Big Thompson, $4,150,000, and Davis Dam, $2,800,000. Unless this money is obtained construction on these developments would need to be curtailed. The President's request is about $10,000,000 less than the bureau believes necessary to keep construction operations on the desired schedule.

NO MAN'S LAND FOR DENTISTS

Garrettsville, Ohio, has no future for dentists, officials say, because of the large amount of fluorine in the well the village water department put down eight years ago.

So much fluorine was in the water that the state department of health ordered it diluted.

Some 85 percent of pre-school age children have perfect molars, according to the National Institute of Health which has been keeping annual case histories on 125 children for the last seven years. Last month Dr. F. A. Arnold of the institute said there is 40 percent less tooth decay among children in Garrettsville than among children the same age in communities not having fluorine in the drinking water.

Reject Tampa Bay bids as $1½ million too high

St. Petersburg, Fla. Port Authority officials have rejected bids on the proposed lower Tampa Bay Bridge after an effort to get some reductions on the estimates failed.

Bids opened Nov. 14 exceeded engineer's cost estimate by more than one and one half million dollars. A compilation of low bids in each of the seven categories of construction established the total cost of the bridge at $13,153,803. The engineer's estimate was $11,750,000.

Since an overall limit of $15,000,000 was to cover, in addition to actual construction costs, contingency costs, insurance and interest, the bids could not be accepted. Interest alone was estimated at $1,500,000.

The main differential between bids received and the engineers estimates applied on the construction of the concrete trestle and the main channel span.

Engineers estimated that the trestle would cost about $3,488,000, while the lowest bid set the cost at $3,829,000—a difference of $480,000.

The same held true on the channel span, a steel structure which the engineers figured could be built for $3,274,000. Lowest bid was $3,975,000.

Missouri River levee bid $1 million below estimate

Army Engineers at Omaha, Neb., Dec. 3 opened bids on the first major project in the Pick-Sloan Plan system of agriculture levees and found a bid nearly $1,000,000 below preliminary estimates.

The apparent low bidder, the Morrison-Knudsen Co. of Boise, Idaho, was nearly one million dollars under the government estimate of $2,707,031.80. The Idaho firm placed a bid of $1,722,679.50.

The project comprises 33 miles of levee along the east side of the Missouri River west of Hamburg, Ia. and east of Nebraska City, Neb. It involves the placing of 6,170,000 cu. yd. of embankment.

Drilling has started on Lucky Peak Dam, Ida.

Test drilling was started last week by the Corps of Engineers on Lucky Peak Dam, formerly known as Government Project No. 2, on the Boise River, nine miles east of Boise, Ida.

Two years ago the project was estimated to cost $11,000,000. It is planned mainly as a flood control measure, but there will be power and irrigation benefits available.

Lucky Peak Dam will be a 250-ft. high rolled earth embankment, 1,700 ft. long, with a storage capacity of 306,000 acre-ft. Relocation of about 11 miles of state highway and 10 miles of country and farm roads will be necessary.

The reservoir will extend 12 miles up Boise River canyon and eventually to the downstream face of Arrowrock Dam.

Ask States' approval of Rio Grande program

The Bureau of Reclamation last week completed and sent to the governors of New Mexico, Colorado and Texas the proposed $95,000,000 program of irrigation and drainage development in the Middle Rio Grande Valley of New Mexico.

The coordinated comprehensive development would be carried out jointly by the bureau, the Corps of Engineers and other agencies.

It is estimated that $75,000,000 of the cost would be ascribed to flood control and sediment control and it is indicated that this expenditure would be made non-reimbursable. Details on this work were given in *ENR* Nov. 6, 1947, vol. p. 625.

MEN AND JOBS

D. M. Forester is construction engineer for the Shadehill Dam to be built by the Bureau of Reclamation on the Grand River near Lemmon, S. D. For the last two years he was project engineer of the San Luis Valley Project in Colorado. A graduate of the Georgia School of Technology, Mr. Forester engaged in private engineering practice in southeastern and south central United States: later, for a consulting engineering firm of New York, he was chief engineer of their European office supervising their consulting engineering work in France, Hungary, Germany, and the U. S. S. R. In 1932, he joined the Bureau of Reclamation and was assigned to work on Hoover Dam where he spent three and one-half years.

Men responsible for construction of the 15-acre New Departure manufacturing plant at Sandusky, Ohio, are in this group: (Left to right) Terence C. Maguire, superintendent, John Winkel Co., mechanical contractor, Larchmont, N. Y.; Paul L. Smith, project manager, National Concrete Fireproofing Co., general contractor, Cleveland; G. E. Hebert, architect's superintendent, Albert Kahn Associated Architects & Engineers, Inc., Detroit; J. C. O'Brien, superintendent, National Concrete Fireproofing Co.; Philip R. Chase, special representative, New Departure Division, General Motors Corp.; Joseph E. Chope, public relations, General Motors Corp., and J. R. Thompson, superintendent, Miller-Brown Co., electrical contractor, New York City.

A party of eight top-ranking highway and bridge engineers from India touring the South and Southwest, spent two days recently conferring with state and federal highway officials in Baton Rouge, La. Standing, left to right: M. S. Rao, assistant engineer, highway department, Madras; R. L. Raju, trust board engineer, Mysore; M. Merran, executive engineer, public works department, Bombay; A. Aziz, executive engineer public works department, Punjab; Maj. M. J. Cramer, former head of the Federal Public Roads Administration. Seated: left to right: N. E. Lant, chief engineer of the Louisiana state highway department, H. K. Nivas, deputy chief engineer, public works department, Bihar; P. A. Frye, formerly director of the Louisiana department of public works; J. G. Talibuddin, executive engineer, Central Public Works department; and J. S. Logan, of the Public Roads Administration.

Daniel A. McClellan, Hornell, N. Y., a senior civil engineer in the State Department of Public Works, has been appointed tentatively to succeed Ray E. Palmer of the Elmira office. The appointee was recently promoted to senior civil engineer after about 35 years of service with the department. He has had wide experience on flood control work and construction projects.

William H. Supplee has retired as county engineer of Erie County, Pa., after almost 19 years of service. Prior to his appointment in 1929, he was construction superintendent at the General Electric Co's Erie works.

William E. Weigle and **H. Luther Stoner** have organized the Weigle Engineering Co., York, Pa., for general civil engineering practice, emphasizing municipal work and flood control. Mr. Weigle was formerly city engineer of York, and Mr. Stoner was with the engineering department of the Pennsylvania Department of Highways.

Z. H. Tessendorf, a graduate civil engineer of Kansas State College, has been appointed city manager of Anchorage, Alaska. He had been acting city manager for three and a half months and previously was city engineer for a year and a half.

F. O. McGrew has resigned as city engineer at Coos Bay, Ore., a position he had held since April, to return to his former Portland, Ore., post with the U. S. Engineers.

Edward A. Herre has been chosen head of the city planning commission at Harrisburg, Pa., succeeding **John T. Brady,** resigning after 33 years' service.

Charles Bailey has been appointed superintendent of streets for Springfield, Mass., to succeed **Benjamin H. Grout,** effective January 1. Mr. Grout before becoming superintendent of streets five years ago, was principal plants and structures engineer.

L. S. Jeffords of Wilmington, N. C., has been named vice-president in charge of operations of the Atlantic Coast Line Railroad. He obtained his civil engineering degree from Clemson College, entered the engineering department of the railroad in 1910 and has served as

chief of personnel, chief engineer, and general manager. He will continue in the latter position.

C. F. Gore, N. C. State highway district engineer at Weldon, N. C., has been named chairman of the public relations committee of the North Carolina State Highway Employees Association. **Withers Davis,** claims engineer, of Clinton, has been named chairman of the association's committee on salaries and working hours, and **W. B. Ferguson,** district engineer, Burnsville, has been appointed chairman of the committee on retirement.

San Diego, Calif., has retained **Earl O. Mills,** city planning consultant, to aid in locating proposed public buildings and highways and to advise the city on matters in connection with the $15,000,000 Mission Bay recreational development, as well as several harbor improvements. Mills, who has his headquarters in St. Louis, Mo., also is consultant for Los Angeles and a number of other cities. One of his principal problems at San Diego will be the recommendation of a site for a grouping of proposed city, county and state buildings planned in a civic center program which has been inaugurated.

Frank A. Kittredge, at one time chief engineer of the National Park Service, has been appointed assistant chief of development of the service at Washington, D. C. Mr. Kittredge was most recently the superintendent of Yosemite National Park, having previously served as superintendent of Grand Canyon National Park and as NPS regional director in San Francisco.

James P. Dodge of Raleigh, N. C., safety engineer for the North Carolina State Highway and Public Works Commission, has been named chairman of the Mid-State Safety Council.

W. H. Bosley has been appointed chairman of the Toronto, Ont., Harbor Commission, which has complete charge of the waterfront, some 600 acres of industrial land, 290 acres of industrial sites, Toronto Island Airport, and nine miles of dock.

The Mobile, Ala. Engineer district has made **O. W. Tidwell** resident engineer of the Jim Woodruff Dam Project on the Apalachicola River at Chattahoochee, Fla. Mr. Tidwell was located for several years at the Air Forces Proving Ground, Eglin Field, Fla.

F. Rodwell Blaisell, who served as a major in the Army during World War II and who recently completed a refresher course for state sanitary engineers at Raleigh, N. C., has been named sanitary engineer for the Western district of the North Carolina State Board of Health, with headquarters at Asheville, N. C.

A. W. Ellson Fawkes, city engineer of Moose Jaw, Sask. for the last 10 years, will retire Dec. 31.

Appointment of **Newton W. Paquette,** Grand Rapids, district maintenance engineer of the Michigan Highway Department, to be assistant to B. F. Downey, maintenance engineer, at Lansing, is announced by Highway Commissioner Charles M. Ziegler. Mr. Paquette joined the department as a draftsman in July, 1922. He has been with it since, except for 5 months with the RFC in 1943. He will fill the position vacated by P. G. McKenna, retired.

Morris W. Muellier has been appointed assistant city engineer of Fort Lauderdale, Fla.

C. J. Bauer, Jr., district engineer of the Clay Sewer Pipe Association and its Michigan representative for the last 6 years and a half, will have headquarters at the association's new Michigan address, 610 Eddy Bldg., Saginaw.

New officers of the Interstate Commission on the Potomac River Basin plan next year's campaign. Raymond V. Long (center), head of the Virginia Planning Commission, is chairman and Harold A. Kemp (right), director of sanitary engineering for the District of Columbia, vice-chairman, while Dr. D. L. Seckinger (left) of the District of Columbia Health Department continues as treasurer. Not shown is Edwin R. Cotton, the commission's full-time engineer-secretary.

S. V. Cortelyou, assistant state highway engineer for District VII, and Frank Cressy, district construction engineer, view with apparent pride work on the nearly completed Terminal Island Access Freeway in southern California. These two men are in charge of the field construction work in the Los Angeles metropolitan area for California's postwar highway construction program. The budget for this district is said to be larger than the budget for the entire state in prewar periods.

Officers of the Construction Section, National Safety Council, face the camera at an executive committee meeting in Chicago: (Left to right) F. J. Crandell, Boston, new general chairman; Lloyd A. Blanchard, Washington, D. C., retiring chairman, and Otto S. Holmskog, Milwaukee, Wis., new vice general chairman.

Highway Research Board Meeting

(*Continued from page one*)

system was affected by pumping, and this year the figure is up to 12 percent, with failures due to pumping exceeding the rate of replacement.

Less than one percent of the traffic is causing most of the damage, according to Prof. Woods. In answer to a question as to what axle load appears to be the safe limit he said the indications in Indiana are that it is around 18,000 lb. This conclusion is based on the fact that the sharp rise in pumping coincides with the sharp rise in violations of the 18,000 lb. axle limit.

Checking pavement pumping

Experimental work conducted in Indiana to check pumping by the injection of cement slurries was described by W. H. Goetz. These studies showed that the addition of calcium-aluminate cement in amounts ranging from 11 to 19 per cent of the portland cement normally used in such slurries have been found to be advantageous. The amount varies with the various brands of portland cement. Age of the portland cement also is a factor.

A mechanical jack was used for raising the badly-broken pavement slab to permit better alignment of the pavement. The cost averaged $7.50 a joint as against a cost of $60 for replacement of a 10-ft. section of the pavement slab. F. H. Green expressed the view that these costs could be further reduced as this work had been done on an experimental basis.

Pumping in Illinois

A cooperative study of the same problem in Illinois, conducted by the Illinois Division of Highways and the Portland Cement Association, was described in a report by H. W. Russell of the Illinois Division of Highways.

Principal conclusions of this study are that for the prevailing conditions of traffic and subgrade, thicker pavements do not pump less than thinner ones, although there is some indication that thicker pavements offer greater resistance to severe pumping. Joint bars did not appear to have much effect on pumping, but distributed mesh reinforcement almost eliminated pumping at intermediate cracks. However, pumping was more severe at the joints in the mesh-reinforced pavement. A relatively long spacing of expansion joints serves to reduce pumping considerably.

Well-sealed joints and well-drained shoulders were found to help materially in reducing pumping. No pumping was found on sandy soils, and none on soils containing more than 55 percent of sand and gravel (material retained on No. 270 sieve).

Vibrating macadam bases

On construction of drybound and waterbound macadam bases, the penetration of screenings into the bases can be greatly expedited by use of vibratory equipment as the screenings are added, according to Charles W. Allen and S. O. Linzell, both of the Ohio Department of Highways.

They described a three-axle tandem roller with the center roller an idler that was vibrated at 3,600 pulsations per minute, and a machine that consisted of a crawler-propelled frame which moved a battery of six vibrating shoes over the bases stone, the shoes vibrating at 2,800 pulsations per minute. Use of these two machines indicated that the vibrating materially reduced the labor and equipment hours in filling macadam bases with screenings and that the bases built by vibratory methods appear to be as dense as those built by conventional methods.

Durability to freezing and thawing of portland-cement concrete pavements made with aggregate of poor quality may be increased appreciably by use of air entrainment, Sterling L. Bugg of Purdue University reported. Although air entrainment lowered the flexural strength of the concrete, the work indicated that use of air entrainment may make possible the use of certain aggregates that could not be used otherwise.

A paper prepared by George H. Delano of the Massachusetts Department of Public Works revealed that by means of the seismic method to obtain field data time and money can be saved on the preparation of highway plans showing the profile of foundation rock. Work begun in 1944 by that department indicates the use of seismic profiles will reduce appreciably the number of required borings and will facilitate a better spacing of those borings.

Equally encouraging results have been obtained on other projects by electric resistivity methods, PRA engineers pointed out in discussion. They also reported that on some projects these methods permitted quicker work with a smaller crew.

Winter highway work

Work in New Hampshire during the past six years has proven that less man-hours and less equipment-hours per mile per winter are required for direct application of sodium chloride than when abrasives are used to prevent ice formation on highways, L. F. Johnson of that state's highway department, told the session dealing with maintenance. Moreover, in addition to the extra cost of using the abrasives, there is also the expense of removing this material from shoulders, catchbasins and culverts he said.

Spreading 300 to 400 lb. per mile in one application has proven sufficient to dissolve the ice and provide a bare pavement after a New Hampshire ice storm.

Surfacing costs controlled

By applying the latest methods and allowing the contractor to use to a maximum his ability to develop special

(*Continued on following page*)

Engineers found scarce and underpaid

Findings of a joint study conducted by the Highway Research Board and the American Association of State Highway Engineers entitled "Salary and Wage Practices of State Highway Departments" were summarized by S. C. Hadden, chairman of the committee that prepared the report, at one of the evening sessions of the Highway Research Board meeting.

Mr. Hadden said that as of July 1 of this year, the state highway departments lacked 9,000 engineers, and his guess is that the need is greater today than it was then. Mr. Hadden expects this condition to continue despite the fact that the engineering schools are crowded to overflowing because the highway departments have no systematic way for recruiting young engineers and most of them are not paying salaries comparable to those that can be obtained by young men in other work. Since 1942, state highway department employees have received salary increases ranging from 9 to 60 percent, with an average of 25 percent, which is far out of line with the increase in the cost of living.

The study divides the compensation of highway department employees between professional and sub-professional. The median professional salary was found to be $3,350, and the median sub-professional salary $2,050. Median professional salaries in individual states varied from $2,520 to $4,800, and the median sub-professional salaries from $1,380 to $2,940. The report states that it is significant that 8.1 percent of all professional salaries are $2,400 or less.

equipment to speed up the work, a major rise in the cost of surfacing existing Ohio roads with macadam pavements has been prevented, according to C. R. Hanes of that state's road department. In recent years, Ohio has salvaged 350 to 500 miles of pavement per year and the demand for bituminous concrete has varied from 850,000 to 1,000,000 tons annually.

The secret in getting good results with this resurfacing is carrying out the work at exactly the right time rather than waiting until the pavement is in too bad a shape, Mr. Hanes said. Advantages other than reasonable cost cited for this method of salvage were: The road being improved does not need to be closed to traffic, the method is applicable to any type of existing pavement, and it is possible to carry out an extensive mileage of work during a given construction season. Extensive special equipment used in Ohio in widening existing pavements and thereby reducing the cost of this work was also described by Mr. Hanes.

Skid resistance tests

Results obtained from more than 1,000 measurements of the skid resistance of various types of pavement were summarized by T. E. Shelburne and R. L. Sheppe of the Virginia Highway Department. The tests were made with a standard four-door sedan at speeds ranging up to 40 mph. Various types of tires also were used.

In discussion of the tests, Professor Ralph A. Moyer of Iowa State College said that the Virginia tests verified much of the work he had done in earlier tests in Iowa and demonstrate that non-skid surfaces can be built that are nearly as safe when wet as when dry. He urged other highway departments to make similar tests as a car can be equipped for such testing for about $100.

Tests on airfields

A progress report on the airfield runway tests at Stockton Field in California was given by O. J. Porter, consulting engineer, Sacramento, who showed tentative design curves for flexible pavements subjected to 150,000 and 200,000 lb. wheel loads. Mr. Porter said that it is entirely possible to design flexible pavements for such loads and for tire pressures up to 160 lb. but such pavement must have adequate subbases. He added that multiple wheel assemblies can be expected in the near future, which will help somewhat on this difficult problem.

A similar report on studies being conducted by the Bureau of Yards and Docks, Navy Department, was submitted by L. A. Palmer and James B. Thompson of that bureau. Mr. Palmer said that this study had indicated beyond doubt that under the pavement the in-place subgrade moisture content is less and the in-place subgrade density is greater for most soil types than has generally been assumed in design. Particularly has this been true for flexible type pavements. It also was found that distributed plane traffic without overloading tends to slowly increase the load bearing capacity of asphalt surfaced runways. This is not the case where the traffic is confined to relatively narrow lanes.

In general, Mr. Palmer said, their studies tended to confirm the results of studies made by the Department of Transport in Canada, which were re-

(*Continued on following page*)

Highway maintenance costs rise sharply

Sharply rising maintenance costs were reported at the annual meeting of the Highway Research Board by the Committee on Maintenance Costs. The committee's findings were based on an analysis of the actual cost of maintaining 10,000 miles of highway composed of the same relative mileage of different surface types that exist on all the state highways of the nation.

The cost figures cover labor, material, equipment and overhead and cover the following types: non-surfaced roads; soil, stone or gravel surfaced roads; low type and high type bituminous surfaces and cement-concrete surfaced roads. These classes were further broken down into six maintenance operations: surface; shoulders and approaches; roadside and drainage; traffic service; snow, ice and sand control; and bridge maintenance. The country-wide average cost of each item was found by averaging the unit costs of each state, weighing each in accordance with its proportionate use.

Using the 1935 costs as a base, trends for the main items were determind. These are shown in the accompanying charts.

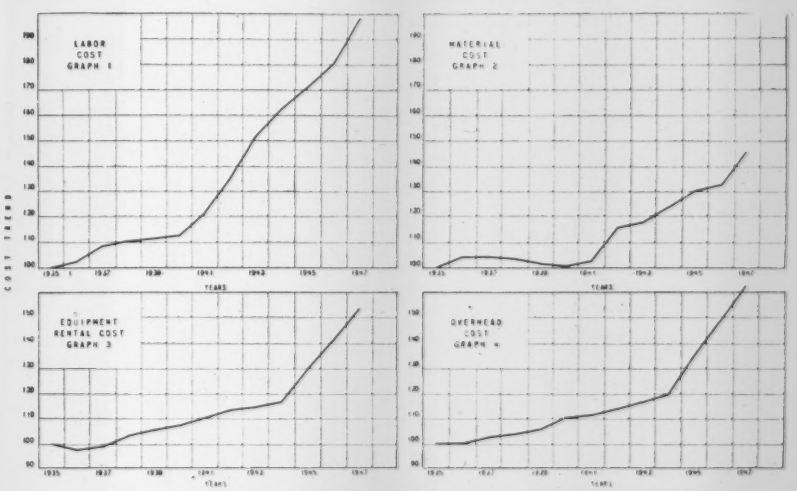
Maintenance labor costs increased gradually from 1935 to 1940 and then rose sharply, the 1947 figure being 98 percent above the 1935 base and 77 percent over 1940. The rise in rates for equipment operators and common labor are the highest, being respectively 104 and 103 percent, while foremen's rates have only gone up 70 percent. Labor now accounts for practically half the cost of highway maintenance.

The average maintenance expediture on the entire state highway system during the years 1935 and 1936 was $403.88 per mile, and in the representative 10,000 miles taken for this study it was $402.82. The cost per mile on the latter roads rose to $435.56 in 1940 and to $689.96 in 1947.

Large increases in the weight or volume of traffic have been found to increase maintenance costs to levels considerably above the average.

Rex M. Whitton, chairman of the Committee on Maintenance Personnel, cited this great increase in maintenance costs as a clear indication of the need for greatly increased highway revenues if highway building is to be carried forward at a rate sufficient to meet the growing demand for better facilities.

This study was made by the Project Committee on Maintenance Costs, of which J. S. Bright, PRA, is chairman.



Trends in the cost of the four major items going into the maintenance of highways—labor, materials, equipment and overhead.

(Continued from preceding page)
ported to last year's meeting by Norman W. McLeod. Mr. McLeod followed Mr. Palmer on the program for this year's meeting, giving a further progress report on the studies conducted in Canada.

Design methods questioned

Commenting on Mr. McLeod's paper of last year, which had only recently been published by the Highway Research Board, W. K. Boyd, chief, Flexible Pavement Branch, U. S. Waterways Experiment Station, Vicksburg, Miss., observed that Mr. McLeod's paper characterized the design method of the Corps of Engineers and others in the country as "ultra conservative," giving thicknesses greater than required to meet actual conditions. On this he said that while the Canadian design curves call for much less thickness for runways than called for by the U. S. Engineers, the Canadians require thicker taxiways, which does not appear justified by the difference in service conditions. He believes that the thickness called for by the American design method is justified in view of our limited knowledge of what future conditions are to be.

Further comment on Mr. McLeod's paper was made by O. J. Porter, who said that it appears to be good construction practice to design for the worst conditions to be found in any field, not for the average conditions. As indicative of the value of conservative design, Mr. Porter cited the early failure of several airfields during the war years, failures which were costly in operating delays.

In reply to this comment, Mr. McLeod said that actual tests on fields where pavements have been down for six years show that much less pavement is required than would be called for by the saturated California bearing ratio test.

Flexible pavement design

Further consideration of this subject came up at the panel discussion of flexible pavement held Tuesday evening, at which time E. B. Bail of the New Mexico Highway Department said that the results of making the California bearing ratio test in its saturated state should be used as a guide, not as an absolute criterion for design purposes.

Stresses in concrete slabs

Evan P. Bone of the Ohio River Division of the Corps of Engineers reported the results of an investigation into the temperature stresses set up in experimental thick concrete slabs. While the temperature gradients in slabs of normal thicknesses are straight-line relationships introducing few complications into stress calculations, experimental investigation into the corresponding gradients for slabs up to 24 in. thick show that a curved relationship exists, varying with the time of day and the air temperature. Using an installation involving five buried thermocouples, actual temperature gradients had been determined for 24-in. concrete slabs and a theoretical analysis had been made of the resulting temperature stresses. Compressive stresses up to 252 psi. and tensile stresses up to 114 psi. had thus been found on a relatively sunny spring day.

Tests on bitumen-sand mixes

Gregory P. Tschebotarioff and Hans F. Winterkorn of Princeton University reported jointly on the results of tests on submerged bitumen-sand mixtures under slow repetitional loading. This study followed previous work reported by the first author at previous HRB meetings and the same experimental apparatus had been used. Specimens were treated with 4 percent RC-2 asphalt and some specimens were treated also with small quantities of aniline-furfural (0.04 percent aniline and 0.02 percent furfural). These admixtures were added in an attempt to obviate stripping of the asphalt from the sand grains and the results justified the experimentation.

Plunger penetrations after 13,000 load repetitions on specimens submerged in water with the aniline-furfural content were found not to exceed 70 percent of corresponding pentrations for specimens with the asphalt only. They were found not to exceed 50 percent of the plunger penetrations recorded on dry sand specimens with no admixtures. It was therefore suggested that for sand asphalt mixtures which were to be subjected to vibratory or repetitional loading use of aniline-furfural would result in considerable improvement in performance. In the discussion of this paper it was mentioned that bacteria are now being used for the stripping of oil and bitumen from sand grains when this is desired.

Continuously-reinforced pavement

Current studies and tests of continuously-reinforced concrete were reported in three papers, the first by W. R. Wolley, materials engineer of Division 4 of the Public Roads Administration who reviewed the history of continuous reinforcement and drew some conclusions of experience to date. This experience indicates that five-tenths of one percent of the cross-sectional area of the pavement slab is about the correct amount of steel required to cause closely spaced, tightly closed transverse cracks to form in long slabs.

H. W. Russell, engineer of materials of the Illinois Division of Highways, gave details of 5½ miles of test pavement built in that state recently on U. S. Route 40, which carries a large volume of heavy truck traffic. The experimental pavement is 22 ft. wide and divided into eight test sections, six of which are about 3,500 ft. long and two are 4,230 ft. long. Four sections are uniformly 7 in. thick, and four have a uniform thickness of 8 in. The main construction contracts include about 4 miles of standard 10-in. pavement 22-ft. wide with 78-lb. wire fabric reinforcement and contraction joints at intervals of 100 ft., thus affording a basis for direct comparison with the experimental section.

Longitudinal steel in the test sections amounts to three, five and seven tenths of one percent as a means for determining whether less than the theoretical amount of steel of about one percent can be used.

About 90 percent of the pavement is built over potentially pumping soils.

An elaborate system of reference monuments and reference plugs has been installed to facilitate checking.

Test road in New Jersey

A similar test section built this year on Route 25 in New Jersey was described by William Van Breemen, engineer of special assignments, New Jersey State Highway Department. The southerly section of this test pavement is 5,130 ft. long, 10-in. uniform thickness, and has 0.72 percent of longitudinal reinforcing steel. The northerly section is 5,430 ft. long, of 8-in. uniform thickness, and has 0.90 percent of longitudinal reinforcing steel. Both sections also are equipped with many reference plugs. All reinforcing mats were lapped 15 in., and at the end of each day's construction operations, a minimum of 6 ft. of reinforcing mats was left projecting beyond the construction joints to be embedded in the following section.

In comment on this pavement, Mr. Van Breemen said that there has been very little movement at the ends of these test sections so far.

Prof. William L. Malcolm of Cornell, in discussion, said that a section of reinforced continuous pavement 3½ miles long that he built in Ontario in 1925 when he was a contractor is still in good condition. A few cracks have opened enough to require filling with bituminous material.

This report of the Highway Research Board meeting will be concluded in the Dec. 25 issue.

ENGINEERING SCHOOL NEWS

Hydraulics exhibit planned at Louisiana—$50 tuition increase at Stevens—California plans an experiment station—New mechanical-aeronautical building to be built at Minnesota

The School of Hydraulic Engineering of Louisiana State University last week had asked aid in the establishment of a permanent hydraulics exhibit. The staff of the school hopes that government agencies, industry, and individuals will assist in creating a representative exhibit, the site of which will be on the Mississippi River.

Any kind of contribution that shows the development of hydraulic instruments and machines, various models, cutaway sections of small hydraulic machines, plans and specifications of hydraulic structures, publications or illustrated documents is desired. Any items contributed will be classified and exhibited at the school with the name of the donor indicated. The school will consider the payment of transportation charges on the various items sent officials said.

Those having items which they wish to contribute should correspond with the Director, School of Hydraulic Engineering, Louisiana State University, Baton Rouge 3, La.

University of California officials have inspected buildings and equipment at the Livermore Naval Air Station, investigating the possibility of using those facilities for an engineering experiment station, which needs an area large enough to permit field studies in tests of road materials or airport runway materials, and certain operational engine tests. The Livermore site is one of several in the area being considered by the school.

Ivan R. Jensen has become associate professor of civil engineering at the University of North Dakota where he is in charge of the courses in structural engineering. He formerly was instructor of aeronautical engineering at Iowa State College, and holds two degrees in civil engineering from the University of Minnesota.

D. G. Monroe, former professor at Northwestern University, Evanston, Ill., has joined the staff of the University of North Carolina's Institute of Government at Chapel Hill, N. C., and will teach courses in historical and physical aspects of highway construction in North Carolina. The courses will be open to both regular students of the university and trainees who pursue special courses of study there.

Following are new additions to the civil engineering department at the University of Florida:

Associate Professor John E. Kiker, Jr., is professor in charge of sanitary engineering. Professor Kiker has been a district engineer with the New York State Department of Health since 1936, except for periods in the Sanitary Corps and as director of public health engineering for Yonkers, N. Y. He is a graduate of M.I.T. and had his master's work at New York University.

D. Allan Firmage has become assistant professor of structural engineering. He is a graduate of the University of Utah and had his master's work at M.I.T. Since 1942, Professor Firmage has been an engineer in the research and development laboratories of the Corps of Engineers, Ft. Belvoir, Va.

George R. Grantham has been appointed assistant professor of sanitary engineering. His undergraduate and master's work were done at Michigan State College and two years were spent on the doctorate at Illinois Institute of Technology. During the war, Professor Grantham was a major in the Army Sanitary Corps.

H. T. Garrett photo

Professor Emeritus — Although over 90 years old, Henry S. Jacoby (right), professor emeritus of bridge engineering at Cornell University, attended the recent annual banquet of the Washington, D. C., Society of Engineers of which he and ex-President Herbert Hoover are the only honorary members. He is shown with Clifford A. Betts, civil engineer with the U. S. Forest Service and the society's 1947 president.

An increase in the tuition fee at Stevens Institute of Technology, Hoboken, N. J., from $550 to $600 a year, effective September, 1948, has been voted by the trustees. President Harvey N. Davis explained that the increase in tuition was made necessary by the greatly increased maintenance and operation costs, the need for higher faculty salaries, and for adequate financing of the plant betterment and expansion program now under way. He said that in the last two years five new buildings have either been completed or placed under construction, and that three new dormitories and two new faculty apartment buildings have been purchased. The rise in tuition of $25 a semester, the first increase since 1940, will bring the cost of education at Stevens up to the average of other technical colleges.

Richard K. Steele has been appointed instructor in structural engineering. He is a graduate of the University of Pittsburgh and since 1941 has been with Curtiss-Wright Corp. of Columbus, Ohio, where he was a senior research engineer.

Evan W. Vaughan, formerly deputy chief of the design branch, Sacramento, Calif., district, Corps of Engineers, has become associate professor of civil engineering at the College of Applied Science, Syracuse University, Syracuse, N. Y. His previous positions include assistant engineer TVA in charge of soil mechanics laboratory; associate engineer, the Panama Canal on soil mechanics studies for Third Locks project; and engineer for Parsons Brinckerhoff, Hogan and MacDonald in Venezuela, on studies and design for the Caracas water supply.

A new mechanical-aeronautical engineering building will be built on the University of Minnesota campus within 15 months, W. T. Middlebrook, university business vice-president, has announced. Contracts, including a 15-month completion date and totaling $2,108,235, have been awarded by the board of regents. Contractors indicate that the work will get under way immediately. However, it is said that, on account of high costs, this amount will not be sufficient to carry out all the plans.

The faculty of the engineering division of the Georgia Institute of Technology has been increased by one-third this year, Dean C. L. Emmerson has announced.

OBITUARY

Robert A. MacGregor, 80, died in New York City Dec. 9. When he retired in 1935 as engineer in charge of maintenance for the Borough of Manhattan, he had been in the service of the city 38 years.

George E. Baker, 68, city engineer of Long Beach, Calif., died recently. He worked for 10 years with the Metropolitan Water District before taking the city engineer position in 1938.

J. Reginald Halls, construction engineer for the Central Mortgage and Housing Corp., Ottawa, Ont., and former supervisor of munition plants in eastern Canada, died at Vancouver, B. C., Nov. 29.

Robert Glendower Lynn, 59, died recently at West Palm Beach, Fla. He was former head of the U. S. Engineer sub-office at West Palm Beach. He was also a former superintendent of public works for Delray Beach. He joined the U. S. Engineers at Pittsburgh, Pa., in 1905. Later he went to Vicksburg, Miss., as lock and dam inspector.

D. D. Orr, 48, bridge engineer for Canadian National Railways, Winnipeg, Man., died at Prince Rupert, B. C., Dec. 1.

William J. Reilly, 61, resident engineer for the Kentucky highway department, died in Louisville Dec. 5.

James C. Goodwin, Sr., 40, civil engineer of Pinson, Ala., died Nov. 29.

Charles W. Brown, 53, a civil engineer with the Pennsylvania Railroad at Chicago, Ill., died at Chicago recently.

Paul Lippert, 65, a civil engineer for Chicago, Ill., since 1905, died Dec. 5. He was efficiency engineer on pumping stations for the bureau of engineering.

Lawrence M. Johnson, 84, a civil engineer who had lived in Minneapolis, Minn., for 63 years, died there Dec. 1. He founded the Hennepin Bridge Co. and was its president until he retired in 1932.

Samuel Graham Porter, 73, died at Calgary, Alta, Nov. 30. For 15 years he was chief of the Department of Natural Resources of the Canadian Pacific Railway Co. at Calgary. He was a graduate of Baylor University, Waco, Tex., and received his civil engineering degree from the Massachusetts Institute of Technology, 1903.

Charles A. Firth, 57-year-old engineer who had been Gila Valley water commissioner since 1934, died Nov. 24 at Tucson, Ariz. Firth was a native Arizonian. He managed the Aravaipa Mining Co. after World War I and later was engineer on two big projects in southern Arizona, the Swift trail to the summit of Mount Graham and the Stockton Pass road.

Richard L. Waycott, died Dec. 2, at Halifax, N. S. He was long on the staff of the Canadian Public Works Department as a civil engineer.

William M. Sutcliffe, 44, engineer of Bay Village, Ohio, for the last 16 years, died Dec. 9 in Cleveland. He was graduated from Case School of Applied Science as a civil engineer.

Thomas C. Heath, 64, Takoma Park Md., who had been a bridge builder on the Philadelphia-Baltimore division of the Baltimore and Ohio Railroad and later a prominent building contractor, died Dec. 5 in Washington, D. C.

Thomas Stanley O'Brien, senior claim engineer in the New York State Department of Public Works Bureau of Rights of Way, died recently in Albany. A graduate of Rensselaer Polytechnic Institute, he was appointed to the Public Works Department in 1914 as an assistant engineer and was promoted to his recent position in 1942.

MAJOR MEETINGS

American Society of Civil Engineers, annual meeting, Hotel Commodore, New York, N. Y., Jan. 21-24, 1948.

Canadian Construction Association, 30th annual meeting, Chateau Frontenac, Quebec, Que., Jan. 25-28.

American Road Builders' Association, and its Divisions, annual meeting, Willard, Mayflower and Statler Hotels, Washington, D. C., Jan. 26-28.

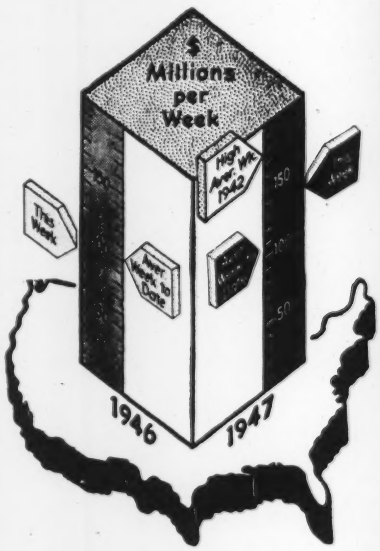
Associated General Contractors of America, Inc., 29th annual convention, Dallas, Tex., Feb. 9-12.

Associated Equipment Distributors, 29th annual meeting, Chicago, Ill., Feb. 15-19.

U. S. Conference of Mayors, annual conference, Waldorf-Astoria Hotel, New York, N. Y., Feb. 16-18.

American Concrete Institute, annual convention, Shirley-Savoy Hotel, Denver, Colo., Feb. 23-26.

CONSTRUCTION ACTIVITY



As Reported this week to ... *Engineering News-Record*

CONTRACT VOLUME

Continental U. S. Only (Thousands of Dollars)

	Week of Dec. 18 1947	Cumulative 1947 (51 wks.)	Cumulative 1946 (51 wks.)
Federal	$28,497	$647,879	$598,214
State & Mun.	32,424	1,816,175	1,411,065
Total Public.	$60,921	$2,464,054	$2,009,279
Total Private	69,218	3,131,570	3,132,411
U. S. Total	**$130,139**	**$5,595,624**	**$5,141,690**

WHERE CONSTRUCTION ACTIVITY ORIGINATED THIS WEEK

Dollar Volume (Thousands)

Type of Work	This Week	Cumulative 1947 (51 wks.)	Cumulative 1946 (51 wks.)
Waterworks ...	$2,016	$138,734	$108,465
Sewerage	3,921	174,302	112,999
Bridges	7,648	194,279	126,947
Highways	9,311	786,545	764,998
Earthwork, Waterways	11,780	326,264	326,648
Buildings, Public	24,100	601,749	413,573
Industrial ...	22,727	857,976	1,100,443
Commercial ..	36,064	1,866,939	1,834,409
Unclassified ...	12,572	648,836	353,208

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1947 (51 wks.)	Cumulative 1946 (51 wks.)
NON FEDERAL	$2,591,543	$1,695,379
Corporate Securities	1,193,544	661,358
State and Municipal	1,150,288	809,021
Fed. Aid Highway. .	247,711	225,000
FEDERAL	818,729	1,714,695
**Total Capital ..... **	**$3,410,272**	**$3,410,074**

ENR INDEX NUMBERS

Index Base = 100	1913	1926
Construction Cost..Dec.'47	432.30	207.81
Building Cost .....Dec.'47	325.27	175.83
Volume .....Nov.'47	238	104